

## SEQUENCE LISTING

<110> Kenneth Chien, Wolfgang Dillman, Susumu Minamisawa,  
Huaping He, Masahiko Hoshijima, Markus Meyer, Christopher  
Scott, Yibin Wang, Gregg Silverman

<120> A METHOD FOR INHIBITION OF PHOSPHOLAMBAN  
ACTIVITY FOR THE TREATMENT OF CARDIAC DISEASE  
AND HEART FAILURE

<130> 6627-9025

<140> unknown

<141> November 2, 1999

<150> US 60/106,718

<151> November 2, 1998

<160> 9

<170> Word Perfect 8.1

<210> 1

<211> 52

<212> PRT

<213> Human Phospholamban

<220> wild type

<221> amino acid sequence

<222> 1...52

<400> 1

Met Glu Lys Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Arg Ala Ser Thr Ile  
1 5 10 15

Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn Leu Phe Ile Asn Phe  
20 25 30 35

Cys Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Val Met Leu Leu 52  
40 45 50

<210> 2

<211> 52

<212> PRT

<213> Human Phospholamban

<220> Val49Ala mutant

<221> amino acid sequence

<222> 1...52

Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Ala Met Leu Leu 52  
40 45 50

<210>	3
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<212>	PRT
<213>	Human Phospholamban

<220> Glu2Ala mutant  
<221> amino acid sequence  
<222> 1...52

Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn Leu Phe Ile Asn Phe Cys  
20 25 30 35

Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Val Met Leu Leu 52  
40 45 50

<210>	4
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<212>	PRT
<213>	Human Phospholamban

<220> Arg14Glu mutant  
<221> amino acid sequence  
<222> 1...52

Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn Leu Phe Ile Asn Phe Cys  
20 25 30 35

[illegible]

Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Val Met Leu Leu 52  
 40 45 50

<210> 5  
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 <212> PRT  
 <213> Human Phospholamban

<220> Ser16Asn mutant  
 <221> amino acid sequence  
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 Met Glu Lys Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Arg Ala Asn Thr Ile  
 1 5 10 15

Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn Leu Phe Ile Asn Phe Cys  
 20 25 30 35

Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Val Met Leu Leu 52  
 40 45 50

<210> 6  
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 <212> PRT  
 <213> Human Phospholamban

<220> Lys3Glu/Arg15Glu mutant  
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 Met Glu Glu Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Glu Ala Ser Thr Ile  
 1 5 10 15

Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn Leu Phe Ile Asn Phe Cys  
 20 25 30 35

Leu Ile Leu Ile Cys Leu Leu Leu Ile Cys Ile Ile Val Met Leu Leu 52  
 40 45 50

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<210> 7  
 <211> 16  
 <212> PRT  
 <213> Drosophila

<220> antennapedia  
 <221> amino acid sequence  
 <222> 1...16

<400> 7

Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys  
 1 5 10 15

<210> 8  
 <211> 16  
 <212> PRT  
 <213> Human Phospholamban

<220> carboxy terminal  
 <221> amino acid sequence  
 <222> 1...16

<400> 8

Met Glu Lys Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Arg Ala Ser  
 1 5 10 15

<210> 9  
 <211> 269  
 <212> PRT  
 <213> Contractilin

<220>  
 <221> amino acid sequence  
 <222> 1...269

<400> 9

Met His His His His His His Val Ala Gln Ala Ala Leu Thr His Ser Ser Ser  
 1 5 10 15

Val Ser Ala Asn Pro Gly Glu Thr Val Lys Ile Thr Cys Ser Gly Gly Gly Asn  
 20 25 30 35

Tyr Ala Gly Ser Tyr Tyr Tyr Gly Trp Phe Gln Gln Lys Ser Pro Gly Ser Ala

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40 45 50  
 Pro Val Thr Val Ile Tyr Ser Asn Asp Gln Arg Pro Ser Asn Ile Pro Ser Arg  
 55 60 65 70  
 Phe Ser Gly Ser Thr Ser Gly Ser Thr Ser Thr Leu Thr Ile Thr Gly Val Arg  
 75 80 85 90  
 Ala Glu Asp Glu Ala Val Tyr Phe Cys Gly Ser Asn Ser Gly Thr Gly Tyr Val  
 95 100 105  
 Gly Ile Phe Gly Ala Gly Thr Thr Leu Thr Val Leu Gly Gln Ser Ser Arg Ser  
 110 115 120 125  
 Ser Thr Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr Pro Gly Gly Ala  
 130 135 140  
 Leu Ser Leu Val Cys Arg Ala Ser Gly Phe Thr Phe Ser Arg Phe His Met  
 145 150 155 160  
 Met Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Gly Ile Asp  
 165 170 175  
 Asp Gly Gly Ser Phe Thr Leu Tyr Gly Ala Ala Val Lys Gly Arg Ala Thr Ile  
 180 185 190 195  
 Leu Arg Asp Asn Gly Gln Ser Thr Val Arg Leu Gln Leu Asp Asn Leu Arg  
 200 205 210  
 Pro Glu Asp Thr Ala Thr Tyr Phe Cys Val Lys Thr Lys Cys Gly Gly Asn  
 215 220 225 230  
 Gly Trp Cys Gly Ala Asp Arg Ile Asp Ala Trp Gly His Gly Thr Glu Val Ile  
 235 240 245  
 Val Ser Ser Thr Ser Gly Gln Ala Gly Gln Tyr Pro Tyr Asp Val Pro Asp Tyr  
 250 255 260 265  
 Ala Ser  
 269

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Glu Met Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys  
20 25 30 35

<400> 11

Lys Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Arg Ala Ser Thr Ile Glu Met  
20 25 30 35

<400> 12

<220>	TAT
<221>	amino acid sequence
<222>	1...11

The figure consists of ten vertical panels, each showing a different stage of embryonic development. 
 Panel 1 shows a small, early-stage embryo. 
 Panels 2 through 9 show progressively larger and more complex embryos, with visible internal structures like the yolk and developing organs. 
 Panel 10 shows a fully developed embryo, likely just before or after hatching, with clear external features. 
 Each panel has a white scale bar in the lower right corner.

&lt;400&gt; 15

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg  
 1 5 10

&lt;210&gt; 16

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; E. coli

&lt;220&gt; H6-ANT

&lt;221&gt; amino acid sequence

&lt;222&gt; 1...61

&lt;400&gt; 16

Met Arg Gly Ser His His His His His Gly Met Ala Ser Met  
 1 5 10 15

Thr Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp  
 20 25 30

Lys Asp Pro Ser Ser Arg Ser Ala Ala Gly Thr Met Glu Phe Arg  
 35 40 45

Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys  
 50 55 60

Ala  
 61

&lt;210&gt; 17

&lt;211&gt; 79

&lt;212&gt; PRT

&lt;213&gt; E. coli

&lt;220&gt; H6-wtPLB-ANT

&lt;221&gt; amino acid sequence

&lt;222&gt; 1...79

&lt;400&gt; 17

Met Glu Lys Val Gln Tyr Leu Thr Arg Ser Ala Ile Arg Arg Ala  
 1 5 10 15

Ser Thr Ile Glu Met Pro Gln Gln Ala Arg Gln Lys Leu Gln Asn  
 20 25 30

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